

### **Amendments to the Specification:**

Rewrite the paragraph at page 1, line 5 as follows.

This application is a division of nonprovisional application number 09/514,452, filed 2/25/2002, and claims priority under 35 U.S.C. § 119(e) (1) of provisional application serial number 60/121,541, filed 02/25/99, provisional application serial number 60/121,657, filed 02/25/99, and provisional application serial number 60/135,263, filed 05/21/99.

Rewrite the paragraph on page 7, line 24 as follows.

Referring now to FIG. 5A, there is a diagram showing an embodiment of the symbol transmit sequence for TDD with STTD encoding. The exemplary symbol sequence  $S_1$ - $S_8$  shows a partial sequence of data symbols presented to the transmit circuit on lead 106 (FIG. 1). This symbol sequence corresponds to data symbols 420 that precede midamble 422 (FIG. 4). The symbols are rearranged and transformed for transmission from antennas ANT 1 and ANT 2 according to symbol transmit times  $0, T, 2T \dots (N+3)T$ . There are  $2NT$  symbol transmit times corresponding to the first group of data symbols 420. Symbol transmit time  $NT$ , therefore, is approximately in the middle of the transmit sequence of data symbols 420. For example, symbols  $S_1$  and  $S_2$  are transmitted at transmit times  $T$  and  $2T$ , respectively, from antenna ANT 1. Transformed symbols  $-S_3^*$  and  $-S_4^*$  are transmitted simultaneously at transmit times  $T$  and  $2T$ , respectively, from antenna ANT 2. These transformed symbols are complements of complex conjugates of respective symbols  $S_3$  and  $S_4$ . The sequence continues for symbols 420 and 424 (FIG. 4). This transmit sequence advantageously ~~provides~~ reduces the complexity of the zero forcing (ZF-STTD) and the minimum mean squared error (MMSE-STTD) STTD decoders by allowing the receiver to neglect the intersymbol interference (ISI) of the block of data symbols  $0$  to  $(N-1)T$  on the  $NT$  of  $2NT$  symbols.

Rewrite the paragraph on page 10, line 16 as follows.

Referring now to FIG. 7, there is a block diagram showing signal flow for multiple users for a TDD receiver of the present invention using STTD encoding. This diagram is an extension of the circuits of FIG. 6A and FIG. 6B to perform parallel interference cancellation for multiple users as will be described in detail. There are L fingers which despread received signals from K users. Matched filter circuits 700-704, therefore, selectively pass L signals corresponding to each respective multipath for each of K users. These matched filter output signals are applied to respective STTD decoder circuits 706-710 and, subsequently, to rake combiner circuit 712. The rake combiner circuit 712 combines L multipath signals for each of K users. The combined signals for the K users are applied to symbol decision circuit 714. Each of the K symbols are determined and produced as output signals on bus 716.

Rewrite the paragraph on page 15, line 8 as follows.

Turning now to FIG. 9A, there is a block diagram of another embodiment of interference cancellation circuit of the present invention with an STTD decoder and a zero forcing STTD equalizer. The received signal  $\tilde{R}$  of equation [33] is applied to via lead 900 to a whitening matched filter 902. This whitening matched filter includes the multiple finger matched filters 700-704 and their respective sampling STTD decoders 706-710 of FIG. 7. A product of this received signal and the whitening matched filter is applied to a zero forcing STTD equalizer circuit 904 to produce data symbol matrix  $\hat{\tilde{D}}$  at lead 906. The term inside the zero forcing STTD equalizer circuit 904 yields a zero forcing solution to equation [33] without any intersymbol interference (ISI) or multiple access interference (MAI) as given in equation [34], where  $\zeta_{\tilde{N},\tilde{N}}$  is the covariance of the noise vector  $\tilde{N}$ . and  $(.)^H$  denotes the Hermitian operation on a matrix.